

CIL
EMU CRITICAL ITEMS LIST

12/24/91 SUPERSEDES 08/31/90

ANALYST:

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NAME P/N QTY	CRIT	FAILURE MODE & CAUSES	FAILURE EFFECT	RATIONALE FOR ACCEPTANCE
EMU ELECTRICAL HARNESS, ITEM 440 BVT67498-02 (1)	2/2	<p>640FHD3: Electrical open or short, microphone lines.</p> <p>CAUSE: Cable chafing against connector shell or shield, improper connector strain relief, Faulty connection between the connector and the lead wires.</p>	<p>END ITEM: Open circuit or short to ground in microphone lines.</p> <p>RFE INTERFACE: Loss of communications.</p> <p>MISSION: Terminate EVA.</p> <p>CREW/VEHICLE: None.</p>	<p>A. Design - The CCA connector cable interface is strain relieved by potting the harness within the connector housing and assembling a molded rubber boot over the harness and attaching it to the connector housing. The cables to the CCA connector are braided together to distribute any loading on the harnesses. An insulating card is fixed between the CCA and J10 connectors so that it takes up any axial loading on the harness.</p> <p>B. Test - Component Acceptance Test - The 440 harness is subjected to acceptance testing prior to final acceptance testing prior to final acceptance. This testing includes the following tests which insure there are no workmanship problems which would cause an electrical short to ground or an open circuit in the microphone signal lines. The insulation resistance and dielectric strength between each conductor and the shield ground is measured to insure there are no shorts. Each connector/cable interface is pull tested to detect any workmanship problems which could cause a premature short circuit. Continuity testing of each conductor is performed after pull testing to insure there were no premature open circuits.</p> <p>POA Test - See component acceptance test.</p> <p>Certification Test - This item has completed the structural vibration and shock certification requirements during 11/83. EC 42806-232-1 (added connector interface check) has been incorporated and certified since this configuration was certified.</p> <p>C. Inspection - To insure there are no workmanship problems which would cause a short or open circuit in the harness conductors, the following inspections are performed: Harness cables and conductors are visually inspected prior to assembly to insure there are no defects which could cause a short to ground or an open circuit due to defects in the</p>

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2/2 440FM03:

cable insulation.
Connector wiring is inspected before and after potting to insure there is no conductor damage and that the conductors are properly strain relieved and properly dressed to prevent conductor shorting to the adapter ring or an open circuit.

Insulation resistance and dielectric strength are measured between each conductor and shield ground to insure there are no shorts prior to and after potting of the connectors.

Contact crimp samples are made prior to the start of contact crimping and at the conclusion of crimping and subjected to a pull test to insure the crimping tools are operating properly. This insures there will not be any high resistance problems at the conductor.

Strain relief cord length is checked to insure no loading placed on cables during pull testing.

D. Failure History -
None.

Related failures: 408-R-EMU-44D-0002 (7-30-86) During EEM connector mate/demate cert cycle testing the shielding to the J10 connector was intermittently open after completing 1000 cycles. This failure was caused by a stiffening of the harness at the J10 connector from Styzast that wicked up the cable during assembly. This reduced the effectiveness of the cable strain relief and made the cable/shield susceptible to breakage when bent at the J10 connector. ES163482-5 redesigns the J-10 connector to eliminate epoxy wicking by incorporating an all rubber strain relief boot.

E. Ground Turnaround -
Tested per FEMU-R-001, SEMU Communications and Blowed Check.

F. Operational Use -
Crew Response -
PreEVA/EVA: trouble shoot problem, if no success, discontinue use of EMU. Consider third EMU if available.
Training -
Standard EMU training covers this failure mode.
Operational Considerations -

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	2/2	440FMD3;		Flight rules define go/no go criteria related to EMU minimum communications. EVA checklist procedures verify hardware integrity and systems operational status prior to EVA.